BTEC Assignment Brief

Qualification	Pearson BTEC Level 3 National Foundation Diploma in Information Technology
Unit number and title	**Unit 4: Programming**
Learning aim(s) (For NQF only)	**A:** Examine the computational thinking skills and principles of computer programming
Assignment title	Concepts of Programming
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a junior employee at a small software development company. Your company has been invited by a local college to give a guest lecture on programming. Your supervisor has provided you with a portfolio of computer programs and has asked you to research the programs with regard to the concepts used to create a knowledge base and prepare for the visit.

Task 1	**Research** Review the computer programs you have been provided with and conduct research into programming languages and how programming principles have been applied to produce effective applications. You will research principles of programming and: • explain what computational thinking is and analyse how programmers use it to solve problems, including how programmers identify and describe problems and how they communicate features and processes. How programmers recognise patterns, generalise and abstract information required, and how programmers represent problems or systems • explain the uses of software applications and how they can solve problems and meet the needs of clients • explore the features and characteristics of programming languages, to explain the use of different types of programming language, what particular problems each programming language discussed can be used to solve, giving a comparison of those programming languages • describe the constructs and techniques available in different programming languages, explain how they are implemented and documented, contrasting their implementation in different programming languages.

	• analyse the application of logic to program design, considering principles of mathematical and propositional logic, the use of sets and iteration • evaluate how design and implementation of a software application can affect its quality When evaluating the quality software applications you should consider the degree to which user requirements are met, the robustness of the code, its maintainability, efficiency, portability and ease of use
Checklist of evidence required	A report evaluating computational thinking skills and how the principles of software design and computer programming are applied to create effective, high-quality software applications.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
4/A.D1	Evaluate how computational thinking skills can impact software design and the quality of the software applications produced.
4/A.M1	Analyse how computational thinking skills can impact software design and the quality of the software applications produced.
4/A.P3	Explain how the principles of software design are used to produce high-quality software applications that meet the needs of users.
4/A.P2	Explain how principles of computer programming are applied in different languages to produce software applications.
4/A.P1	Explain how computational thinking skills are applied in finding solutions that can be interpreted into software applications.

Sources of information to support you with this Assignment	Stroustrup B. "Programming: Principles and Practice Using C++", Addison-Wesley Professional, 2014, 9780133796742
Other assessment materials attached to this Assignment Brief	*Sample programs for review with task 1*

Note to assessor:

Scenario	Learners should be provided with samples of program code and developed applications to review for task 1. These should be varied in purpose and programming language used. They should provide the learner with plenty of scope to cover the concepts listed in the unit specification.
Task 1, 2, 3 etc.	